

# Welcome ITEN



Significant good news!  
What can we do to help?

DOE-NREL /ITEN Conference  
Golden, Colorado  
December 4-5, 2001

Bob Westby, Director  
Energy and Environmental Applications Office  
NREL



# National Tribal Energy Vision and NREL Mission Synergistic

- National Tribal Energy Vision Summary Statement:  
“By the year 2010 each sovereign Indian Tribe will have sufficient and reliable supply of electricity at reasonable costs to support its social and economic well-being.”
- NREL’s Mission: NREL develops renewable energy and energy efficiency technologies and practices, advances related science and engineering, and transfers knowledge and innovations to address the nation’s energy and environmental goals.

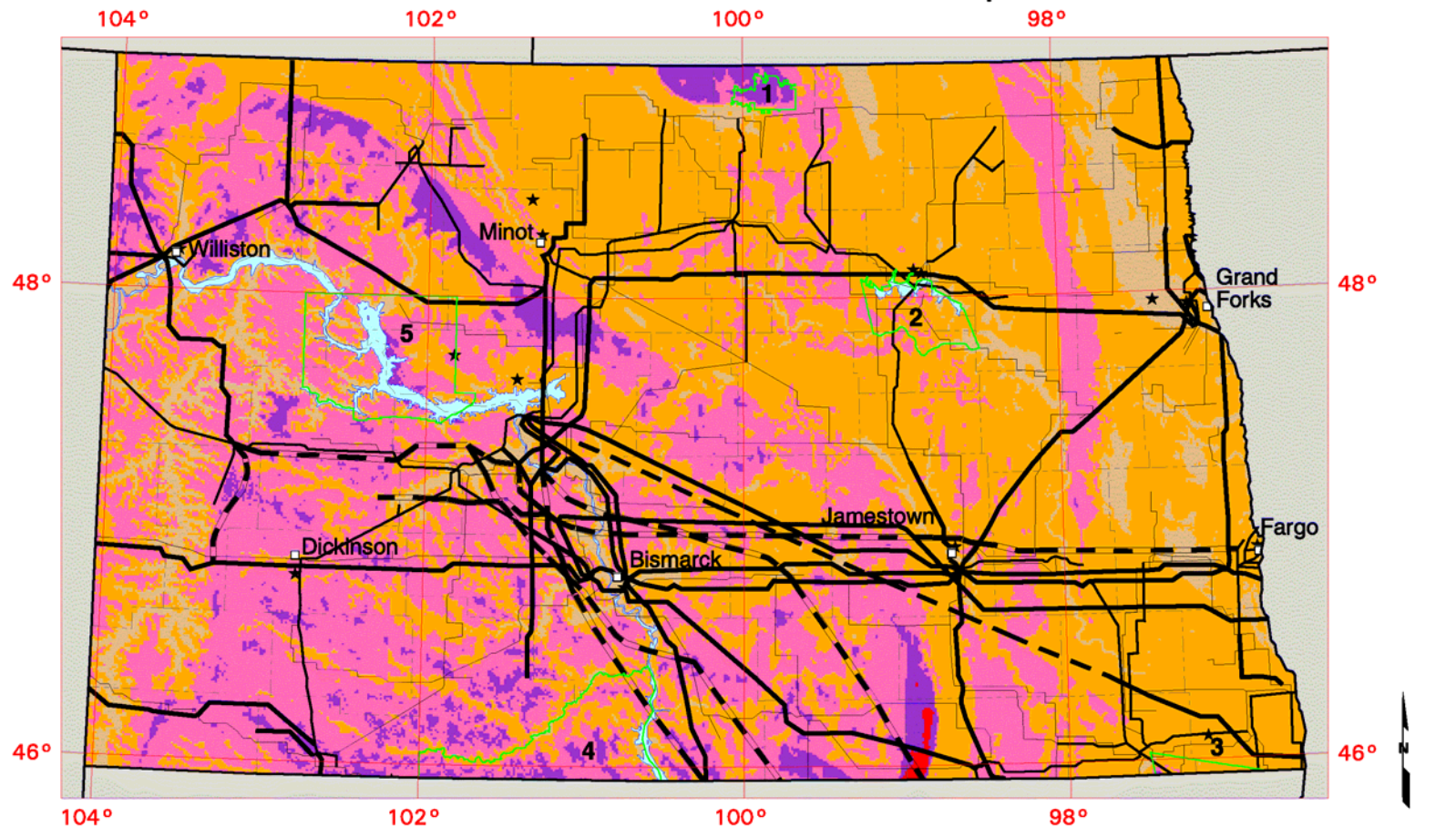


# Tribal Sovereignty Context and Acknowledgement

- "Tribal sovereignty is expressed as the right and responsibility of each Tribe to exercise its powers of self-governance over Tribal energy activities to assure the economic and social well-being of the people"
  - Basis for intergovernmental partnerships
  - Expressed as Tribes in partnership with energy companies
  - Expressed as intertribal cooperation and partnerships



# North Dakota - Wind Resource Map



## Wind Power Classification

Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m <sup>2</sup>	Wind Speed <sup>a</sup> at 50 m m/s	Wind Speed <sup>a</sup> at 50 m mph
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7

<sup>a</sup> Wind speeds are based on a Weibull k value of 2.0

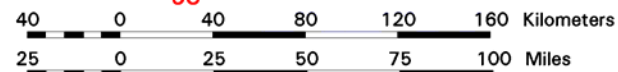
- ★ Meteorological Station with Wind Data
- City or Town

## Transmission Line Voltage

- 69 Kilovolts
- 115 Kilovolts
- 230 Kilovolts
- 345 Kilovolts
- Under Construction

## Indian Reservations

- 1 Turtle Mountain
- 2 Devil's Lake Sioux
- 3 Lake Traverse
- 4 Standing Rock
- 5 Fort Berthold



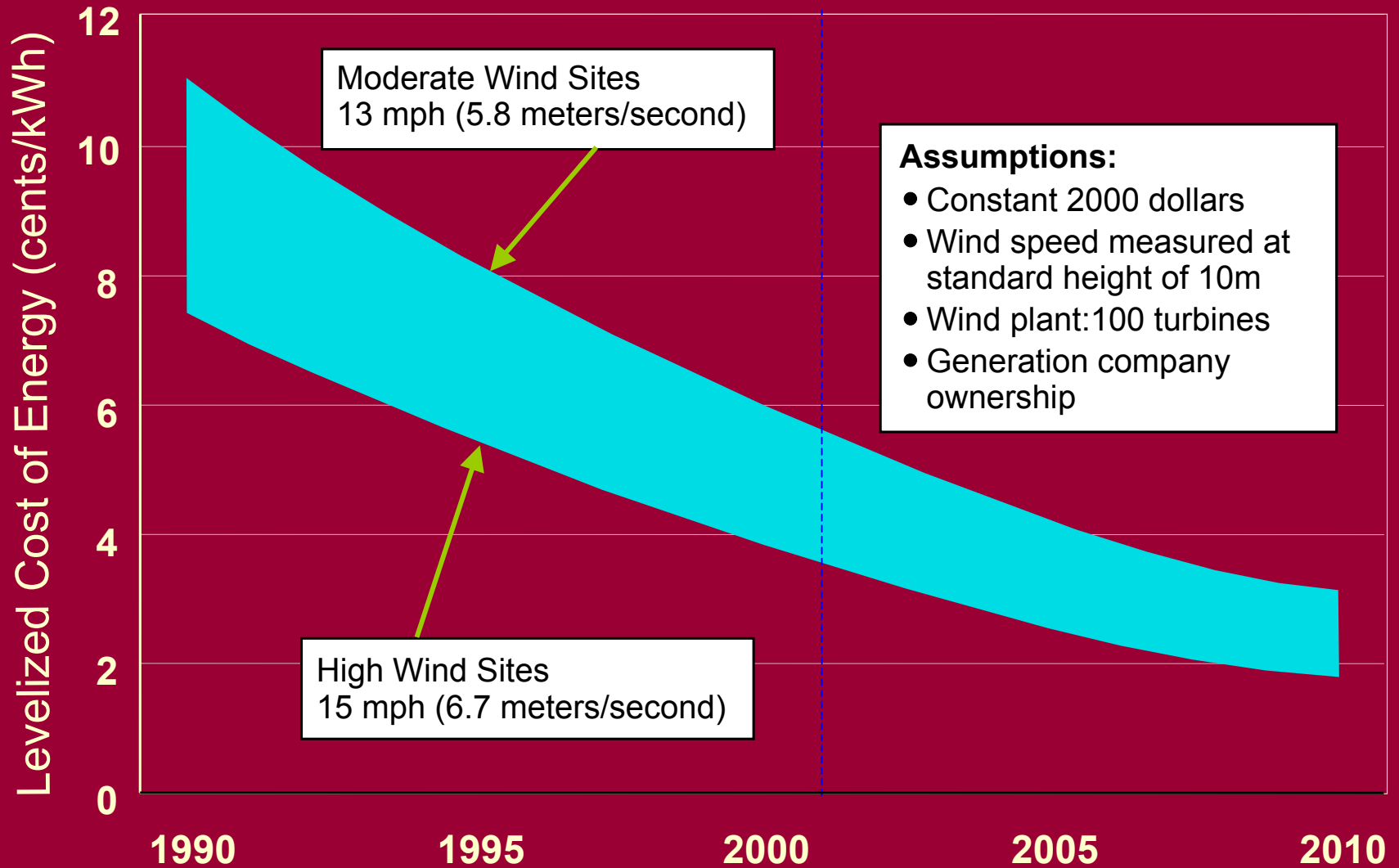
U.S. Department of Energy  
National Renewable Energy Laboratory

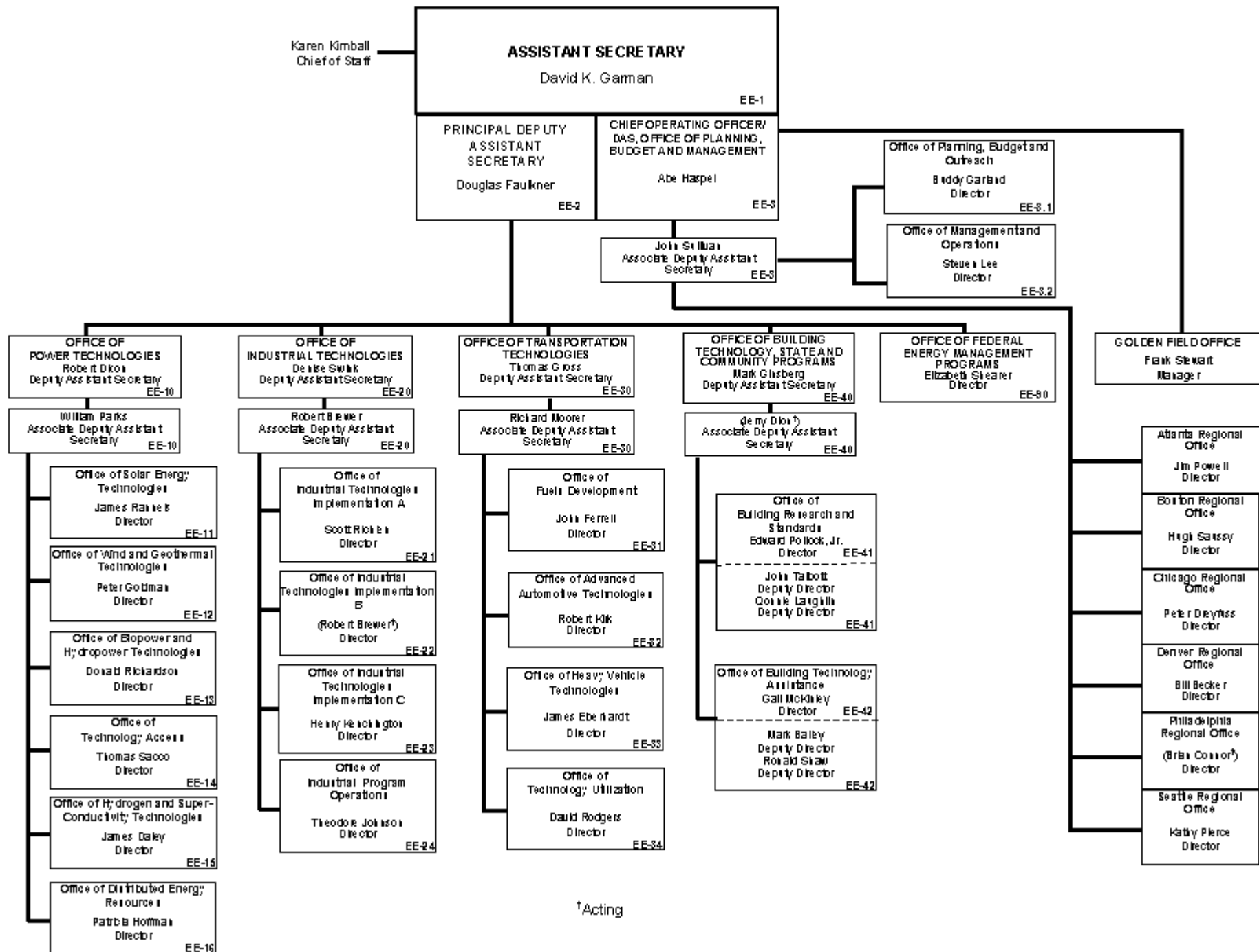


# Sources of Renewable Energy

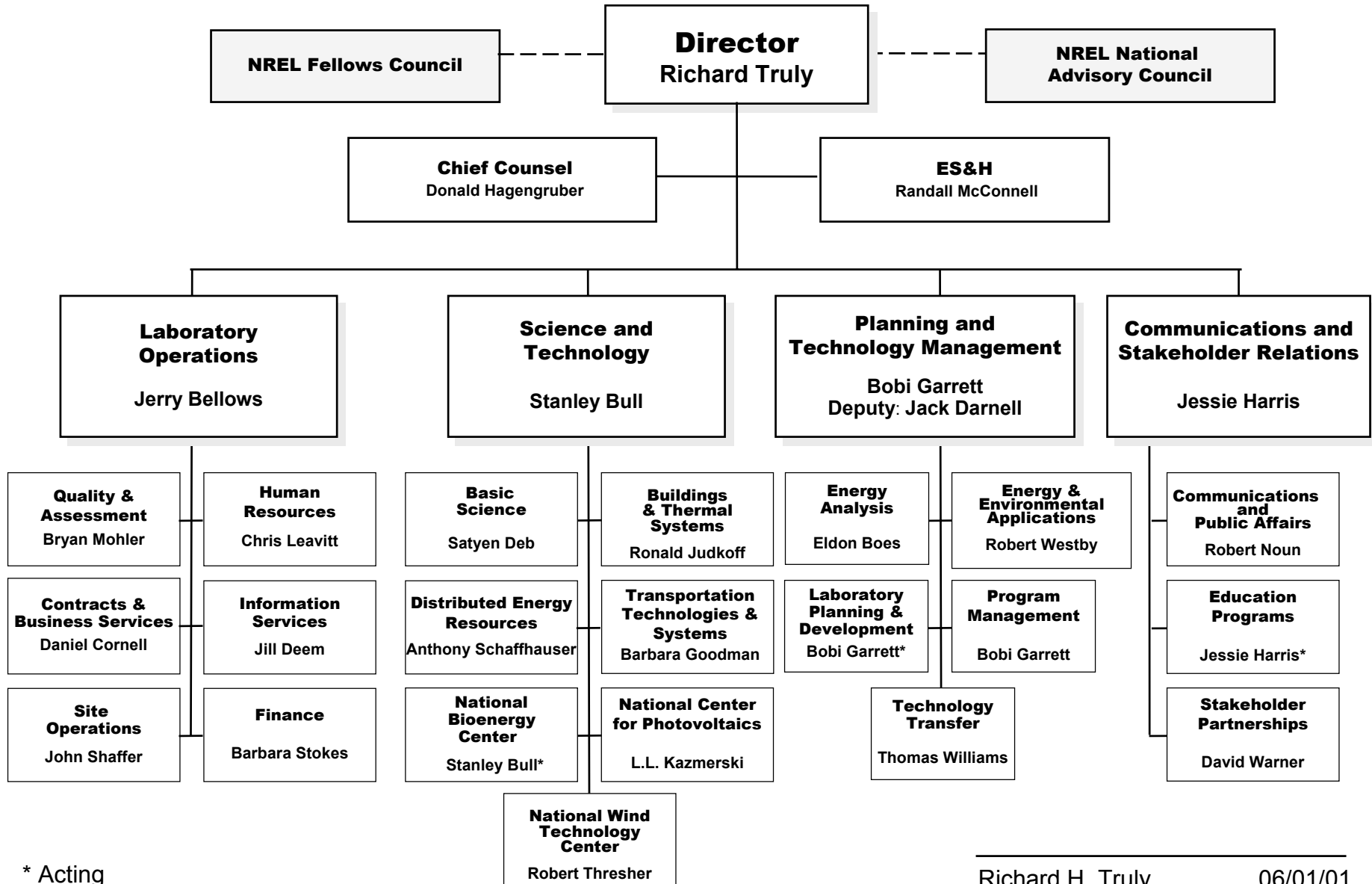


# Cost of Energy for Large Wind Farms





# National Renewable Energy Laboratory



\* Acting

Richard H. Truly

06/01/01

# Energy & Environmental Applications Office (E&EAO)

- Federal Energy Management Program (FEMP)
- State and Local Initiatives
- Environmental/International

Home of Cross-Cutting Deployment Facilitation  
Capabilities



# Lessons Learned

## Priorities

- Economic and social well-being
- Energy (Self-sufficiency and economic opportunity)
- Environmental benefits (Important side benefit)



# Lessons Learned (continued)

## Requirements for Sustainable International RE Electrification Projects (On-grid and Off-grid)

- Establish self-sustaining electrification markets and businesses
- Comprehensively address policy, market, and technology issues
- Collaboration required among stakeholders (strategic partners)



# DOE Native American Program

## FY02 Activity: \$3M Competitive Proposal

### ITEN/DOE-NREL Strategic Planning Focus

- Collaborative Needs Assessment
- Support development of framework for the Competitive Proposal
  - Strategic Planning/Capacity building
  - Hardware projects
- Follow-on Activities at March Conference



# Renewable Energy: Electricity Generation

- Wind power (Wind Powering America, National Wind Technology Center)
- Geothermal power (GeoPowering the West, Buildings Technology)
- Solar power {Photovoltaics, National Center for Photovoltaics (NREL and Sandia)}
- Concentrating solar power (Troughs, Dish Sterling, NREL and Sandia)
- Biomass Power (National Bioenergy Center)



# Energy Efficiency

## Existing buildings

- Rebuild America {commercial buildings (federal and tribal), innovative public and private partnership building, energy services (FEMP aggregation model)}
- Building America {work with residential builders to develop and implement innovative building processes and technology, Oneida Tribe 35 super insulated solar homes (HUD/DOE)}



# Energy Efficiency (continued)

## New Construction

- Building codes (model energy codes, appliance standards, passive strategies, solar thermal opportunities)
- Design tools (Energy –10: Design tool that analyzes and illustrates the energy and cost savings that can be achieved through more than a dozen sustainable design strategies)



# Federal Energy Management Program (FEMP)

## Deployment Facilitation Capability

**Dedicated** Program in support of **Federal agency** energy use reduction/renewable energy projects

- Design Assistance (Northern Cheyenne Tribal Capitol Building, Lakota Heritage and Education Center)
- Energy services {Indian Health Services and BIA Energy Savings Performance Contracting (ESPC)}



# Federal Energy Management Program (FEMP) (continued)

- Utility energy services (Green Power, Green Tags)
- Land use planning (BLM -renewables in Programmatic EIS)
- Co-funding for renewables projects for Federal Facilities serving Native Americans (1998-1999: 7 projects over \$300K)



# Additional Opportunities

- Power Reallocations {support for any resulting RE or EE projects, Tribal Utility Authorities support (RE focus)}
- Policy and Analysis Support {Renewable Portfolio Standards (RPS), net metering, interconnections, RE solutions as related to Tribal regulatory activities}



# Additional Opportunities (continued)

- State and Local support {National Association of State Energy Officials (NASEO), Western Regional Air Partnership (WRAP), EPA State Enforcement Programs (SEPs)}
- Native American Faculty and Undergraduate Internship Program



# Value-added Willing Partner!

